

Muller and Coalson, 1989

Data Set 49

Reference: Muller, M.M., and E.B. Coalson, 1989, Diagenetic and petrophysical variations of the Dakota Sandstone, Henry Field, Green River Basin, Wyoming: in Petrogenesis and petrophysics of selected sandstone reservoirs of the Rocky Mountain region, E.B. Coalson et al., eds., Rocky Mountain Association of Geologists, Denver, Colorado, p. 149-158.

Author's affiliation: Bass Enterprises Production Co.

Age: Early Cretaceous (Albian)

Formation: Dakota Formation

Location: Henry Field, Moxa Arch, Uinta County, Wyoming, United States

Well: Sixteen cores from various wells.

Depth range: 13,600 - 14,700 feet (approximate).

Lithology: "Three sandstone lithofacies are recognized in Henry Field: fluvial channel, restricted marine, and overbank. Rocks present include sandstones, siltstones, shales, mudstones, and thin coals." Predominantly sublitharenite. This data set is dominated by fluvial channel facies, which are "moderately well sorted, fine to medium grained sandstones".

Alteration -- secondary porosity: "The relative abundance of several authigenic cements and their subsequent dissolution contributes significantly to the differing porosity and permeability values observed." ... "Secondary porosity is inferred to have been created primarily by dissolution of carbonate cement, as well as by some dissolution of quartz and matrix clay. Evidence of dissolution includes patches of partially dissolved carbonate cement, detrital quartz grains with irregular and corroded margins, and a dispersed fabric of framework grains with relatively little compaction."

Alteration -- clay content: "The presence of chlorite, mixed-layer illite/smectite, and finely crystalline kaolinite in these Dakota reservoirs appears to degrade permeability. At 10% porosity, sandstones containing 0-9% matrix clay have an average permeability of 1.7 md, whereas sandstones containing more than 10% matrix clay have an average of only 0.09 md. Thus moderately kaolinite-rich, quartzose Dakota sandstones typically have good permeability, in part due to the presence of large percentages of well-connected vuggy porosity."

Production: condensate, light oil, and gas

Core measurement conditions: not given.

Data entry: manual entry from Figures 7 and 8 of the referenced paper.